BRUHATH BANGALORE MAHANAGARA PALIKE

Name of the Work: The Work of Providing and laying of 600 mm dia. RCC Sewerage pipeline from Elements Mall SWD to Thanisandra BBMP office (Near Railway Underpass) along Thanisandra Main road coming under Ward no.6-Thanisandra, Byatarayanapura sub division.

Name of the Agency: D.R Infrastructure

REPORT FOR
EXECUTIVE ENGINEER,
Byatarayanapura Division
BBMP, BANGALORE.

PROJECT MANAGEMENT CONSULTANTS

TEJUS CONSULTANTS
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Contractor/Agency : D.R Infrastructure

Name of the Client : Executive Engineer,
Byatarayanapura Division
BBMP, Bangalore.

Estimated Cost : Rs.120.00 Lakhs

Status of Bill : 1st and Final bill

In the Presence of (a) Mr. Suresh Devatharaj
Assistant Engineer, BBMP, Bangalore.
: (b) Mr. Shridhar
Assistant Executive Engineer, BBMP, Bangalore
: (c) Mr. Dilip Kumar, Site Engineer
M/s Tejus Consultants

SL NO	Description of Item	Comments/observation
1	Cutting road surfaces for pipeline trenches and disposing of the excavated stuff as directed including barricading, danger lighting etc. in the classifications for: Asphalt Road as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
2	EXCAVATING FOR PIPE LINE TRENCHES OF REQUIRED WIDTH by mechanical / & manual means including dressing sides, ramming of bottoms, providing barricading, danger lighting, shoring, strutting, dewatering, etc. IN ALL KINDS OF SOIL MIXED WITH BOULDERS of 30 cms size, etc. for: Pipes of all dia. for depth up to 2.0 M in all types of soils Note : If any shoring and strutting, will be paid separately as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory

AE road NOC

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Pipes of all dia. for depth 2.0 to 4.0 M in all types of soils Note : If any shoring and strutting, will be paid separately as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
EXCAVATING FOR PIPE LINE TRENCHES OF REQUIRED WIDTH by mechanical / & manual means including dressing sides, ramming of bottoms, providing barricading, danger lighting, shoring, strutting, dewatering, etc. IN DISINTEGRATED ROCK, SOFT ROCK, SOFT SHALE AND MEDIUM HARD ROCK COMPRISING OF LIME STONE, SAND STONE, HARD SHALE, SCHIEST, FISSURED ROCK without resorting to blast etc. for Pipes of all dia. for depth up to 2.0 M Note : If any shoring and strutting, will be paid separately as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work Considering 20% of Earth work Quantity	Work done up to the billed quantity and quality is satisfactory
EXCAVATING FOR PIPE LINE TRENCHES OF REQUIRED WIDTH by mechanical / & manual means including dressing sides, ramming of bottoms, providing barricading, danger lighting, shoring, strutting, dewatering, etc. IN DISINTEGRATED ROCK, SOFT ROCK, SOFT SHALE AND MEDIUM HARD ROCK COMPRISING OF LIME STONE, SAND STONE, HARD SHALE, SCHIEST, FISSURED ROCK without resorting to blast etc. for as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
EXCAVATING FOR PIPE LINE TRENCHES OF REQUIRED WIDTH by mechanical / & manual means including dressing Sides, ramming of bottoms, providing barricading, danger lighting, shoring, strutting, dewatering, etc. IN HARD LATERITE ROCK CONTAINING IRON ORE ABOVE 20% BY CHISETELING AND TRIMMING TO PROPER SLOPE etc. for:: Pipes of all dia. Pipes of all dia. for depth 2.0 to 4.0 mtr as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work Considering 5% of Earth work Quantity	Work done up to the billed quantity and quality is satisfactory
Providing and installing sheet piling for both sides of the trenches for following depths with mild steel sheets of not less than 6.5 mm thick, stronger knife edge, recessed spreader sockets, 3 inch single or double wall shields, to be designed by the contractor to withstand all types of soils, maximum depth as per the approved design drawings, including labor charges for installing and removing the sheet piling at various reaches of sewer line constructions, including loading, unloading, transporting to the suitable location etc. complete with all lead and lifts. (Measurement shall be taken for one side only even though it is provided for both sides).For depth 3.0 m to 6m and as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory

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8	REFILLING OF EARTH around pipelines, in layers not exceeding 20 cms. in depth, compacting each deposited layer by ramming after watering all lead and lift including cost of all labor including consolidation by mechanical means approved by the Engineer in charge, when earth is at suitable moisture content with desired field density up to 95% maximum dry density (modified heavy proctor test) for restoration of roads without settlement including HOM of machineries, complete. (The contractor shall take care while consolidating the earth, so that, pipes laid are not damaged due to mechanical compaction and shall restore the damaged pipes at his own cost, in case of damage) etc. with: Approved earth available nearby, lead up to 100 M and lift up to 1.5 M. Note: In exceptional cases, earth may be obtained from borrow pit with extra lead, duly obtaining approval from the Chief Engineer (BWSSB SR 17-18 No. 14.1 Code:A095A) Page 56	Work done up to the billed quantity and quality is satisfactory
9	Disposal off the excess excavated earth of all types by vehicle including loading, unloading with all lead and lifts, labor, HOM of machineries etc. for: Distance of 10 KM (BWSSB SR 17-18 No: 20.5. Code:A115E & F) Page 57	Work done up to the billed quantity and quality is satisfactory
10	Supplying S&S RCC SPUN / VIBRATED CAST PIPES (REINFORCED) pipes NP-3 Class conforming to IS:458-1988 with latest amendments using ordinary Portland cement, for sanitary works and conveying to work site, rolling and lowering into trenches, laying true to line and level including loading and unloading at both destinations and jointing of pipes and specials including cost of specials, perfect linking of joints with jack to correct position including cost of jointing materials, i.e., rubber rings conforming to IS: 5382 for S&S RCC pipes, with all leads and lifts as directed and giving necessary hydraulic test as per ISS to the required pressure and commissioning etc. complete. (Contractor will make his own arrangements for procuring water for testing). Before the execution of the work, the contractor shall carry out the survey and will be paid Extra for the same as per separate item. RCC NP3 Class pipe of 600 mm dia. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
11	Providing and constructing "WIRE CUT BRICK MANHOLE CHAMBERS" using sulphate resistant cement, coNickel in shape attop, with CC 1:3:6 foundation using 40 mm and down size graded metal of approved quality and with an offset of 0.15M alround the chamber. Construct Brick masonry in CM 1:4, 340 mm thick, with wirecut bricks of approved quality, plaster inside and out side with CM 1:3, 12 mm thick, except for the coNickel surface outside wherethe plaster thickness shall be 20 mm. Slope inside to be 1:6 in theconcrete towards central drain and finished smooth. Fixing of pipes in CC 1:2:4 with graded metal of 20 mm and down size. Supplying and fixing SFRC manhole frame and cover conforming to IS:12592 with latest amendment, in CC 1:2:4. Supplying and fixing footsteps made of 12 mm dia. steel bars (Fe-415) with 3 mm thick plastic encapsulation (IS-10910). The footsteps shall be fixed 30cms apart and on CC block embedded to masonry wall. The whole works include excavation in all types of soils, watering, curing, barricading, danger lighting, pouring tar over MH frame and cover, cost of tar, shoring, strutting, de-watering, engraving manhole number with flow direction on the inner coNickel surface etc. as per the drawing etc. as per	Work done up to the billed quantity and quality is satisfactory

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	technical specifications and for the following diameters and depth etc. for:. Constructing Brick Masonry Circular Manholes 1.5 m internal dia. & 1.0 M depth include SFRC F&C (BWSSB SR 17-18 No. 104.1 Code:T310A) Page 169	TEJUS
12	Providing and constructing "WIRE CUT BRICK MANHOLE CHAMBERS" using suplhate resistant cement, coNickel in shape attop, with CC 1:3:6 foundation using 40 mm and down size graded metal of approved quality and with an offset of 0.15M alround the chamber. Construct Brick masonry in CM 1:4, 340 mm thick, with wirecut bricks of approved quality, plaster inside and out side with CM 1:3, 12 mm thick, except for the coNickel surface outside wherethe plaster thickness shall be 20 mm. Slope inside to be 1:6 in theconcrete towards central drain and finished smooth. Fixing of pipes in CC 1:2:4 with graded metal of 20 mm and down size. Supplying and fixing SFRC manhole frame and cover conforming to IS:12592 with latest amendment, in CC 1:2:4. Supplying and fixing footsteps made of 12 mm dia. steel bars (Fe-415) with 3 mm thick plastic encapsulation (IS-10910). The footsteps shall be fixed 30cms apart and on CC block embedded to masonry wall. The whole works include excavation in all types of soils, watering, curing, barricading, danger lighting, pouring tar over MH frame and cover, cost of tar, shoring, strutting, de-watering, engraving manhole number with flow direction on the inner coNickel surface etc. as per the drawing etc. as per technical specifications and for the following diameters and depth etc. for:. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work Depth above 1m and below 2 m (36,923-22,266) = 14,657/-	Work done up to the billed quantity and quality is satisfactory
13	Providing and constructing "WIRE CUT BRICK MANHOLE CHAMBERS" using suplhate resistant cement, coNickel in shape attop, with CC 1:3:6 foundation using 40 mm and down size graded metal of approved quality and with an offset of 0.15M alround the chamber. Construct Brick masonry in CM 1:4, 340 mm thick, with wirecut bricks of approved quality, plaster inside and out side with CM 1:3, 12 mm thick, except for the coNickel surface outside wherethe plaster thickness shall be 20 mm. Slope inside to be 1:6 in theconcrete towards central drain and finished smooth. Fixing of pipes in CC 1:2:4 with graded metal of 20 mm and down size. Supplying and fixing SFRC manhole frame and cover conforming to IS:12592 with latest amendment, in CC 1:2:4. Supplying and fixing footsteps made of 12 mm dia. steel bars (Fe-415) with 3 mm thick plastic encapsulation (IS-10910). The footsteps shall be fixed 30cms apart and on CC block embedded to masonry wall. The whole works include excavation in all types of soils, watering, curing, barricading, danger lighting, pouring tar over MH frame and cover, cost of tar, shoring, strutting, de-watering, engraving manhole number with flow direction on the inner coNickel surface etc. as per the drawing etc. as per technical specifications and for the following diameters and depth etc. for:. Constructing Brick Masonry Circular Manholes 1.5 m internal dia. & 2.0 M depth include SFRC F&C (BWSSB SR 17-18 No. 104.2 Code:T310B) Page 169	Work done up to the billed quantity and quality is satisfactory

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4	Providing and constructing "WIRE CUT BRICK MANHOLE CHAMBERS" using suplhate resistant cement, coNickel in shape attop, with CC 1:3:6 foundation using 40 mm and down size graded metal of approved quality and with an offset of 0.15M alround the chamber. Construct Brick masonry in CM 1:4, 340 mm thick, with wirecut bricks of approved quality, plaster inside and out side with CM 1:3, 12 mm thick, except for the coNickel surface outside wherethe plaster thickness shall be 20 mm. Slope inside to be 1:6 in theconcrete towards central drain and finished smooth. Fixing of pipes in CC 1:2:4 with graded metal of 20 mm and down size. Supplying and fixing SFRC manhole frame and cover conforming to IS:12592 with latest amendment, in CC 1:2:4. Supplying and fixing footsteps made of 12 mm dia. steel bars (Fe-415) with 3 mm thick plastic encapsulation (IS-10910). The footsteps shall be fixed 30cms apart and on CC block embedded to masonry wall. The whole works include excavation in all types of soils, watering, curing, barricading, danger lighting, pouring tar over MH frame and cover, cost of tar, shoring, strutting, de-watering, engraving manhole number with flow direction on the inner coNickel surface etc. as per the drawing etc. as per technical specifications and for the following diameters and depth etc. for:. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work Depth above 2m and below 3 m (53135.0-36923) = 16212/-	Work done up to the billed quantity and quality is satisfactory
5	Providing and constructing "WIRE CUT BRICK MANHOLE CHAMBERS" using suplhate resistant cement, coNickel in shape attop, with CC 1:3:6 foundation using 40 mm and down size graded metal of approved quality and with an offset of 0.15M alround the chamber. Construct Brick masonry in CM 1:4, 340 mm thick, with wirecut bricks of approved quality, plaster inside and out side with CM 1:3, 12 mm thick, except for the coNickel surface outside wherethe plaster thickness shall be 20 mm. Slope inside to be 1:6 in theconcrete towards central drain and finished smooth. Fixing of pipes in CC 1:2:4 with graded metal of 20 mm and down size. Supplying and fixing SFRC manhole frame and cover conforming to IS:12592 with latest amendment, in CC 1:2:4. Supplying and fixing footsteps made of 12 mm dia. steel bars (Fe-415) with 3 mm thick plastic encapsulation (IS-10910). The footsteps shall be fixed 30cms apart and on CC block embedded to masonry wall. The whole works include excavation in all types of soils, watering, curing, barricading, danger lighting, pouring tar over MH frame and cover, cost of tar, shoring, strutting, de-watering, engraving manhole number with flow direction on the inner coNickel surface etc. as per the drawing etc. as per technical specifications and for the following diameters and depth etc. for:. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work Constructing Brick Masonry Circular Manholes 1.5 m internal dia. & 3.0 M depth include SFRC F&C(BWSSB SR 17-18 No. 104.3 Code:T310C) Page 169	Work done up to the billed quantity and quality is satisfactory
6	Providing and constructing "WIRE CUT BRICK MANHOLE CHAMBERS" using suplhate resistant cement, coNickel in shape attop, with CC 1:3:6 foundation using 40 mm and down size graded metal of approved quality and with an offset of 0.15M alround the chamber. Construct Brick masonry in CM 1:4, 340 mm thick, with wirecut bricks of approved quality, plaster inside and out side	Work done up to the billed quantity and quality is satisfactory

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	with CM 1:3, 12 mm thick, except for the coNickel surface outside wherethe plaster thickness shall be 20 mm. Slope inside to be 1:6 in theconcrete towards central drain and finished smooth. Fixing of pipes in CC 1:2:4 with graded metal of 20 mm and down size. Supplying and fixing SFRC manhole frame and cover conforming to IS:12592 with latest amendment, in CC 1:2:4. Supplying and fixing footsteps made of 12 mm dia. steel bars (Fe-415) with 3 mm thick plastic encapsulation (IS-10910). The footsteps shall be fixed 30cms apart and on CC block embedded to masonry wall. The whole works include excavation in all types of soils, watering, curing, barricading, danger lighting, pouring tar over MH frame and cover, cost of tar, shoring, strutting, de-watering, engraving manhole number with flow direction on the inner coNickel surface etc. as per the drawing etc. as per technical specifications and for the following diameters and depth etc. for:. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work Depth above 3m and below 4 m (69,726-53,135) = 16,591/-	
7	Conducting the level and strip of SURVEY of alignment of Main sewers of required diameter including all data required for generating GIS map of sewer network, preparation and submission of plan and LS with ground level at 30 M intervals and junction points along the centre line of the alignment etc. showing the right of way, any permanent features, culverts, branch sewer pipe etc. complete as per specifications and as directed by the Engineer in charge with all leadand lifts etc. complete for:: Sewer pipes above 300 mm dia. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
8	Providing, erecting and removing casurina pole three tier BARRICADING using poles of 7.5 to 10 cms dia. and 1.5M height above ground fixed vertically at intervals of 2.0 to 2.5 M centre to centre and horizontally at 0.5M above ground level, including fixing poles in ground for a maximum depth of 0.3M and tied with coir rope firmly including cost and conveyances of all materials, labour, lead and lifts charges etc. complete. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
9	HC Water pumpset (3500 Ltr / Hr) as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
0	KSRB 2.8 : Providing and filling in foundation with granite / trap broken metal 100 mm. and down size, with approved sand including hand packing, ramming, watering, including cost of all materials and labour with all lead and lift. complete as per specifications. specification No. KBS. Bedding for pipeline as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory

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21	Diversion of water course by providing Coffer dams or bunds or island as may be necessary for piers and abutments foundations, bailing out or pumping water during excavation and until completion etc., complete. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work 37.41.2 -do- beyond 1.50 mts depth upto & including 3m depth.	TEJUS Work done up to the billed quantity and quality is satisfactory
22	Dismantling size stone masonry in lime mortar/cement mortar and stacking the size stone and removing and disposing the debris with all lead & lifts etc complete including cost of all equipments and labour etc., complete as per specifications and as directed by the Engineer in charge as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work For Culver / Drains Crossings	Work done up to the billed quantity and quality is satisfactory
23	Providing and constructing granite / trap / basalt size stone masonry in foundation with cement mortar 1:6 stone hammer dressed in courses not less than 20 cms high, bond stones at two meters apart in each course including cost of materials, labour, curing with all lead and lifts, etc., complete as per specification and as directed by the Engineer in charge. -For Drain walls. Specification No. KBS 5.1.13 with using available stones as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
24	KSRRB M400-6.1 : Construction of granular sub-base by providing close graded cushed stone aggregates of granite / trap / basalt material, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site, spreading in uniform layers with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications. A. Plant Mix Method For Grading-II Material as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
25	KSRRB M400-17 :Providing, laying, spreading and compacting 150mm graded stone aggregate to wet mix macadam (WMM) specification including premixing the material with water at OMC in mechanical mix plant carriage of mixed material by tipper to site, laying in uniform layers with pavers in sub base/base course on well prepared surface and compacting with vibratory roller to achieve the desired density Grading of material clause: 406 of MORTH specifications. as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
26	KSRRB 500-4 : Providing and applying primer coat for surfaces of medium porosity like cement stabilized soil base @ 1.10kg/sqmt over prepared surface with S.S. bitumen emulsion using bitumen taker fitted with spray set (excluding cleaning of road surface) including cost of all materials, labour, HOM of machineries complete as per specifications. MORTH / Chapter 5 as per the direction of the Engineer In charge of the Work with all lead and lift , loading and	Work done up to the billed quantity and quality is satisfactory

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	unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	TEJUS
	Providing and Laying Semi dense bituminous concrete using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finished to the the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem roller to achieve the desired compaction as per MORTH specification Clause No 508 complete in all respect complete as per specifications. Using 100-120 TPH capacity H.M.P with sensor paver grading-I (35-40mm) with 4.5% NRMB 70 / PMB 70 Grade as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory
28	KSRRB 500-27 : Providing and laying open graded premix carpet of 20mm thick on prepared surface in a single course as wearing course including composed of 11.2 mm and 13.2mm size stone aggregates 0.027 cum / sqm premixed with bituminous binder at 1.46kg / sqm in mini hot mix plant 6-10 tonne capacity laying manually rolling with power roller 8-10 tonne, excluding cost of tack coat, including cost of all materials, labour, HOM of machineries complete as per specificationsusing VG 10 (80/100) grade. MORTH clause No. 511/Chapter 5 as per the direction of the Engineer In charge of the Work with all lead and lift , loading and unloading and all other incidental charges etc., complete as per specification and direction of the engineer-in-charge of the work	Work done up to the billed quantity and quality is satisfactory

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